

What is Claimed:

1 1. A system for exposing a fluid to UV energy for treatment
2 of the fluid, said system comprising:

3 a fluid passageway at least partially defined by a UV energy
4 transmissive barrier;

5 at least one UV energy source positioned to transmit UV energy
6 through said barrier and into said fluid passageway; and

7 at least one UV energy sensor positioned to sense UV energy
8 transmitted through said barrier, said sensor being configured to detect a
9 reduced amount of UV energy transmitted through said barrier.

1 2. The system of claim 1 wherein said fluid passageway is
2 configured to accommodate fluid flow.

1 3. The system of claim 2 comprising a plurality of fluid
2 passageways each at least partially defined by a UV energy transmissive
3 barrier, said system being configured to at least partially divert fluid flow
4 from one of said fluid passageways to another of said fluid passageways after
5 said sensor detects an amount of UV energy transmitted through said barrier
6 of said one fluid passageway is below a predetermined amount.

1 4. The system of claim 1 wherein said system is configured
2 to reduce fluid flow in the fluid passageway after said sensor detects that an
3 amount of UV energy transmitted through said barrier is below a
4 predetermined amount.

1 5. The system of claim 1 wherein said at least one UV
2 energy source comprises an LED.

1 6. The system of claim 1 wherein said at least one UV
2 energy source is positioned adjacent said barrier.

1 7. The system of claim 1 comprising a plurality of UV energy
2 sources and a plurality of UV energy sensors, each of said plurality of UV
3 energy sensors being positioned to sense UV energy transmitted through said
4 barrier by at least one of said UV energy sources.

1 8. The system of claim 7 wherein said UV energy sources
2 are positioned adjacent an external surface of said fluid passageway to
3 transmit UV energy through said barrier.

1 9. The system of claim 7 wherein said UV energy sensors
2 are positioned adjacent an external surface of said fluid passageway for
3 sensing UV energy transmitted through said barrier.

1 10. The system of claim 1 wherein said UV energy
2 transmissive barrier at least partially defines at least one aperture extending
3 into said fluid passageway, said at least one UV energy source being disposed
4 at least partially within said aperture to transmit UV energy into said fluid
5 passageway through said UV energy transmissive barrier.

1 11. The system of claim 1 wherein said UV energy
2 transmissive barrier at least partially defines a plurality of apertures
3 extending into said fluid passageway, said system including a plurality of UV
4 energy sources, and at least one of said UV energy sources being disposed at
5 least partially within each of said apertures to transmit UV energy into said
6 fluid passageway through said UV energy transmissive barrier.

1 12. The system of claim 11 wherein said plurality of apertures
2 are configured at an angle with respect to a direction of flow of the fluid in
3 said fluid passageway.

1 13. A method of exposing a fluid to UV energy for treatment
2 of the fluid, said method comprising the steps of:

3 transmitting UV energy through a UV energy transmissive
4 barrier and into a fluid passageway, thereby exposing fluid in the fluid
5 passageway to UV energy; and

6 sensing the amount of UV energy transmitted through the UV
7 energy transmissive barrier.

1 14. The method of claim 13 further comprising the step of:
2 flowing fluid through the fluid passageway.

1 15. The method of claim 14 further comprising the step of:
2 at least partially diverting fluid flow from the fluid passageway to
3 another fluid passageway after sensing an amount of UV energy transmitted
4 through the UV energy transmissive barrier is below a predetermined
5 amount.

1 16. The method of claim 14 further comprising the step of:
2 reducing fluid flow in the fluid passageway after sensing that an
3 amount of UV energy transmitted through the UV energy transmissive barrier
4 is below a predetermined amount.

1 17. The method of claim 13 wherein said transmitting step
2 includes transmitting UV energy from at least one LED through the UV energy
3 transmissive barrier.

1 18. The method of claim 13 further comprising the step of:
2 cleaning the UV energy transmissive barrier after the sensed
3 amount of UV energy transmitted through the UV energy transmissive barrier
4 is below the predetermined amount.

1 19. The method of claim 18 further comprising the step of:

2 diverting fluid flow from the fluid passageway to another fluid
3 passageway after sensing the amount of UV energy transmitted through the
4 UV energy transmissive barrier is below the predetermined amount.

1 20. The method of claim 19 further comprising the step of:
2 at least partially restoring fluid flow from the another fluid
3 passageway to the fluid passageway after the cleaning step.